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January Brings Winter Field Day to EGARA

For the first time, EGARA will participate in the annual Winter Field Day on Saturday and Sunday, January 28th and 29th. The club will operate out of the Masonic Lodge beginning at 2 pm Saturday and will operate one HF station using its fan dipole antenna. The event is scheduled to run for 24 hours, but may be revised depending on weather conditions.



Winter Field Day

Amateur radio operators may use frequencies on the HF, VHF, or UHF bands (see limitations on page 2) and are free to use any mode that can faithfully transmit the required exchange intact. Similar to the ARRL's Field Day, bonus points are earned in several ways, including using non-commercial power sources, operating from remote locations, satellite contacts, and more.

"Adding Winter Field Day to our club's schedule will give our members an opportunity to get involved in a joint activity and have some fun -- all while practicing our emergency communication skills," said EGARA President Bryan Jackson, W2RBJ. He said that the club will also provide food and refreshments for those members who participate.

The event is sponsored by the Winter Field Day Association. It was created in part to allow Ham radio operators to gain practice using portable emergency communications in winter environments as the potential for freezing temperatures, snow, ice, and other hazards present unique operational concerns. WFD is formatted to help increase Hams level of preparedness for disasters and to improve their operational skills in subpar conditions.

The first Winter field Day was held in January 2007 and the reaction from its participants soon made it into an annual event. The rules and guidelines for this year's Winter field Day can be found on page 2.

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2023 Dues Payable Now

Inflation may have been rampant over the past year, but EGARA is keeping its dues at just \$15 for individuals and \$25 for families. Discounts remain available for multi-year memberships.

Paying them is the same too -- either at a club meeting, or online using the club's secure PayPal portal which is conveniently accessed through its website at:

<https://www.egara.club/pay-dues>

Members are reminded that they must have their dues paid up in order to participate in the club's annual elections.

Next Membership Meeting - January 11, 2023 - 7 pm

WFDA Winter Field Day 2023 Rules

- All stations are limited to a maximum of 100 Watts PEP.
- All logs must be in the Cabrillo format and submitted online at www.winterfieldday.com
- Mexico stations should use MX as their location identifier.
- We have added a 4th category M for Mobile / Mobile stationary stations.
- We have added an additional Antenna bonus.

Eligibility: All licensed amateur radio operators are encouraged to participate. Radio operators in the United States and Canada will use the designated location identifiers set up by the ARRL and RAC field organizations. Operators in Mexico will use MX as their location identifier, and all other operators outside of North America will use DX as the location identifier. All participants are encouraged to submit a log of stations worked.

Objective: To set up an amateur radio field station and successfully make multiple contacts. Successful participants are those who can set up their equipment and correctly log the designated exchange during the operational period explained below.

Operational Period: Winter Field Day is always held the last full weekend in January. For 2023, it will be held on January 28th and 29th. The 24-hour operational period starts at 1900 UTC on Saturday, the 28th and ends at 18:59 UTC on Sunday, the 29th. Stations may begin setting up no earlier than 19:00 UTC on Friday before. However cumulative set-up time shall not exceed 12 hours.

Entry Categories: A WFD operation, regardless of the number of stations operating under one call sign, must be in the same physical location. All station equipment, including antennas, feed lines, and accessories used, must be located within a circular area, whose diameter does not exceed 1,000 feet (300m).

You must choose which category you are going to operate in. If operating as a group under one call sign, all stations in your entry must fit the category you choose. We have added a new category this year. Many participants that would have been an Indoor or Outdoor station last year will now fall under the Mobile / Mobile stationary category.

The categories are:

- H = Home: is defined as any station participating from their permanent livable residence or within 500ft of their Home regardless of operating inside or outside.
- I = Indoor: is defined as any station operating away from Home but from inside an insulated, weather-protected building or structure on a permanent foundation. Indoor stations typically have plumbing, heating/cooling, and running water. Church, EOCs, a club shack, a cabin, and community centers are all examples that would be Indoor.
- O = Outdoor: Outdoor stations are defined as operating from a partly or fully exposed building or shelter that does not typically have plumbing, heating/cooling, or running water available. Operating from a picnic table, park pavilion, tents, or under pop-up canopies are all places that could be considered outdoor. These are locations where you may have to provide your own heat source and/or protection from the elements.
- M = Mobile / Mobile Stationary: These stations are defined as operations from a mobile or potentially mobile structure like an RV, car, van, sailboat, cargo trailer, mobile EOC, ETC. These are operating positions that may offer some sort of built-in heating/cooling.

Entry Class: Your entry class is a number designated by the number of stations in your entry that are capable of simultaneous transmission. Don't count a station where one must be left idle to make contacts on another; do not change your category or class during the event.

Exchange: The designated WFD exchange is your call sign, your Class and Category, plus your location identifier. US and Canadian stations will use the ARRL / RAC Section as designated by those organizations. Mexico stations will use MX, and all other stations outside of the US will use DX. You must accurately copy and record the full exchange. Do not change your section during the contest. If your station changes sections during the event, such as a long haul trucker, your section is the first section you made a contact from.

-continued on page 3-

Winter Field Day Rules...

Bands: All Amateur bands *except 12, 17, 30, and 60 meters*. To qualify as a band worked, at least one valid, two-way QSO must have taken place on the said band during the contest.

Modes: CW, Phone (includes SSB, AM, FM, DMR, C4FM, etc. If the end result is voice, it's Phone), and Digital (includes PSK, RTTY, Olivia, Packet, SSTV, ATV, JS8Call and other soundcard modes. If the end result is text or a picture, it's digital).

QSO Points: Phone contacts count as one point each, and all CW & Digital modes count as 2 points each. Busted exchanges will be penalized by one additional point for each missed exchange or call sign. Duplicate contacts (same call, band, and mode) will not be counted nor penalized.

Power Output Multipliers: The maximum permitted is 100 watts measured from the output of the final amplifier. QRP stations, as defined by transmitting less than 5 watts on CW or 10 watts on phone get a multiplier of 2. All other stations have a multiplier of 1. 100W or less = 1x, QRP = 2x

Multiple Transmitter Limitations: The use of more than one transmitter on a single band & mode is prohibited.

Band Multipliers: Each mode worked on each band counts as 1 multiplier. If you worked both CW and Phone on 20 & 40 meters, your total multiplier would be 4. If you operated CW and Phone on 80, 40, 15, and 10 meters, CW and PSK31 on 20m, FM on 2 meters & 440 you would have a total multiplier of 12x.

Calculating Points: Scores are based on the total number of QSO points x Power Output Multiplier x Band / Mode Multiplier + Bonus Points.

Total Score = (# of QSOs x PO M x B M) + Total Bonus Points

Bonus points:

Alternative Power: You may claim 500 points if no commercial power is used in powering your WFD station. This means any power not connected to the commercial power grid. Generators, batteries, solar power, and wind are all possible sources of alternative power. You may claim this bonus no matter what operational category you are working under.

Outdoor: You may claim 500 points if you are operating outdoors. Every station operating in the Outdoor category should be able to claim this bonus. Any station that is operating in the Home category but chooses to set up outdoors, may also claim this bonus.

Away from Home: You may claim 500 points if you are operating in a location other than home as defined above. If you are operating under the Indoor, Outdoor or Mobile categories, you should be able to claim this bonus.

Antenna: You may claim 500 points if you are setting up an antenna(s) just for WFD. If you or any of your operating stations are using any pre-installed antennas you may not claim this bonus. Pre-installed antennas are defined as any antenna attached to anything that could be used day to day or was set up before the WFD set-up time. This includes home antennas, installed antennas on vehicles, cargo trailers and RVs, and, any other antenna that would be considered permanently installed.

Satellite: You may claim 500 points for making at least one successful satellite QSO. See the appendix below for more information on satellite contacts.

Mobile: You may claim 250 points if you are mobile during the event. This means you are moving / roving and using a vehicle mounted-antenna that can be operated while the vehicle is in motion.

To claim any bonus points, all stations covered in your entry must qualify.

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Winter Field Day Rules...

Miscellaneous Rules:

- All rules governing amateur radio at your location must be observed throughout the event.
- All stations for a single log entry submission must be operated under one call sign.
- Any mode used must be able to faithfully transmit the exchange intact without a conversion table. Stations can be worked once per band, per mode.
- Entrants may not count for QSO credit any contact with anyone who is or was a participant in their WFD operation or is present at their WFD location.
- All voice contacts are equivalent.
- All non-cw digital contacts are equivalent.
- QSOs may only be solicited during the contest and only via the airwaves. The use of spotting clusters, the RBN, APRS, and Winlink to solicit contacts will be allowed during the contest.
- Cross-band contacts are not permitted (satellite QSOs cross-band contacts are exempted).
- The use of more than one transmitter at the same time on a single band-mode is prohibited.
- No repeater contacts are allowed including, DMR that may be transmitted through a repeater on the receiving end.

Log Submission Requirements

All logs must be submitted in the Cabrillo format and contain the proper exchange data. Logs must be submitted by 11:59 UTC on March 1st to be considered. Late entries cannot be accepted. If you find an error in log after submitting, just correct your log and resubmit. The corrected version will replace the original you submitted.

You must submit your logs online at winterfieldday.org

Once submitted, you will receive a confirmation email.

Results will be posted on the Winter Field Day website.

Additional Information

- To claim the Alternative Power bonus, batteries in use may only be recharged using alternate power. When not in use, batteries may be charged by any means available. WFD operations claiming the alternate power bonus must run all station equipment and accessories from an alternate power source, with the exception of the logging-only computer which may be connected to the power grid or any power source available.
- Groups are allowed one dedicated satellite transmitter station without increasing their entry category. Satellite QSOs do not count as a regular QSOs credit. Satellite contacts do not count as a new band / mode multiplier. You only get the 500 Bonus points. You do not receive any additional bonus points for contacting different satellites. A simple CQ (versus CQ WFD) is sufficient, and you should be prepared to give a signal report and your VHF Grid Square to the other station versus your normal WFD exchange. It's likely the other station will not be a WFD contestant, and he will likely want a confirmation of the contact afterwards, especially if your location is remote. Please be considerate and comply.

EGARA Winter Field Day Schedule

Saturday, January 28th

10 am - Members meet at the Masonic lodge to set up fan dipole antenna and HF station gear

2 pm - Winter Field Day Operations begin for 24 hours

Sunday, January 29th

12 pm - Members tear down of antenna and equipment, and clean up of Masonic Lodge

On the Beam

News & Notes

New General Question Pool Released for Ham Radio Licensing Effective July 1, 2023

The National Conference of Volunteer Examiner Coordinators' (NCVEC) Question Pool Committee (QPC) has released the 2023 - 2027 General Class FCC Element 3 Syllabus and Question Pool to the public. The new General Question Pool is effective July 1, 2023, through June 30, 2027.



ARRLVEC
Volunteer Examiner Coordinator®

The new pool incorporates some significant changes compared to the 2019 - 2023 version. Its 432 questions were modified slightly to improve wording and to replace distractors; 51 new questions were generated, and 73 questions were eliminated. This resulted in a reduction of 22 questions, bringing the total number of questions in the pool down from 454. The level of difficulty of questions is more balanced, and the techniques and practices addressed have been updated.

"The newly revised pool must be used for General-class license exams starting July 1, 2023," said ARRL VEC Manager Maria Somma, AB1FM, who is a member of the NCVEC Question Pool Committee. "New test designs will be available to ARRL Volunteer Examiners on that date.

General class examination candidates preparing for their exams using the 9th edition of The General Class License Manual, and/or the 6th edition of ARRL's General Q & A are encouraged to test by, or before, June 30, 2023. New editions of ARRL licensing publications will be available in May, for exams taken on, or after, July 1, 2023.

The Question Pool is available for download at: <http://www.ncvec.org/page.php?id=369>

Old WABY Studio/Transmitter Building Torn Down



In use since the early 1930s, the former studio and transmitter building of WABY radio on Braintree Street in Colonie was leveled on December 9th.

A month before the demolition, EGERA salvaged the station's old 1,000 watt AM transmitter, which is now being restored for use on the Amateur Radio bands.

The self-supporting tower adjacent to the building remains in use and broadcasts the signals of both WAMC-AM (1400) and WABY (900).



EGARA December Meeting Minutes

The monthly club meeting was replaced by its annual Christmas Party and was held on December 14th at Moscatiello's Restaurant in Troy;

- The dinner included a Santa Raffle and six of those present won prizes. They included:

Baofeng 3WP Waterproof HT Radios

Dave Jaegar, Jr., K2DEJ and David Haughton, KD2WAD

Hannaford Gift Certificates

Peter Brickman, KD2YLG & Maria Hickey (Bill Hickey, KD2WQN)

ARRL Membership Renewal

Bill Leue, K2WML

EGARA Membership Renewal

Gina Pendolino, KC2QJC

EGARA Christmas Party 2023



HT Radio Winners



ARRL & EGARA Membership Winners

The History of Ham Radio: North Again

Chris Codella, W2PA, author, John Pelham, W1JA, editor, Phil Johnson, W2SQ, editor

(Editor's note: By special arrangement with the authors, Sidebands is pleased to present this multi-part series on the history of ham radio. Subsequent chapters will be published in future monthly editions of the newsletter)

As ARRL traffic manager Fred Schnell was beginning his voyage to the southern hemisphere with the US Navy, arctic explorer Donald MacMillan announced he would once again sail north with shortwave radio aboard the Bowdoin. The trip would begin in June 1925, and this time he planned to explore the north polar region using airplanes to determine whether any land existed there. The Bowdoin would be accompanied by a second ship, the Peary, captained by Commander Eugene F. MacDonald, Jr., president of Zenith, who would also be MacMillan's second in command. The Peary carried three amphibian airplanes to be used to search for a postulated "vast Arctic continent" as they called it, near the pole. The National Geographic Society, representing the press, would collect news stories for further distribution.

Macmillan asked amateurs around the world, and the ARRL in particular, to help maintain communications with the expedition. Following in Don Mix's footsteps, John Reinartz, of 1QP-1XAM, who was also a Lieutenant in the US Navy Reserve Force, would serve as the expedition's radio operator. Both ships carried radio equipment but only the Bowdoin would have shortwave capability to cover 20, 40, 80, and 160 meters. The airplanes were also equipped with transmitters for 40 meters capable of operating CW or phone powered by batteries in case of a forced landing.

This trip would be short, a dash up and back during the northern hemisphere summer months. Reinartz planned four three-hour periods of operation each day at 6:00 a.m., noon, and 6:00 p.m. Eastern Time. They would primarily operate on 40 meters wavelength with 20 being used more often as they got further north, expecting to rely on that band as the ship entered the region of constant daylight.

As on the previous expedition, the equipment, all donated, was designed and built by Zenith. It was planned out during a conference with Reinartz in March that included Professor Jansky of the University of Minnesota, and Don Wallace, 9ZT, along with Zenith designers Hassel and Forbes.

With easily interchangeable inductors, their transmitter could cover the 20, 40, 80 and 160-meter bands, producing 250 watts output power on CW and phone. It was powered by a 32-volt storage battery with backup, and dual 750-watt gasoline fueled generators. Cold, wet conditions at sea dictated using control panels made from dry maple boiled in paraffin which were supplied by the Thordarson Company, known for their transformers. Tested in Chicago at 9XN with antennas similar to the ones to be used aboard ship, its signal was heard loudly on 40 meters by Schnell at NRRL aboard the USS Seattle 1,600 miles west of San Francisco, and at 4AG in New Zealand—all during the daytime.

Three receivers were supplied: Zenith shortwave, Super Zenith broadcast, and a long wave receiver for press and time signals. The shortwave receiver consisted of a detector and two-stage audio amplifier and, like the transmitter, it had plug-in coils so it could cover the entire 15 through 220 meter range of wavelengths.

The Peary would carry a Navy 2-kilowatt, 500-cycle spark transmitter and a Zenith 2-kilowatt tube transmitter for communicating with its aircraft on 500 meters.



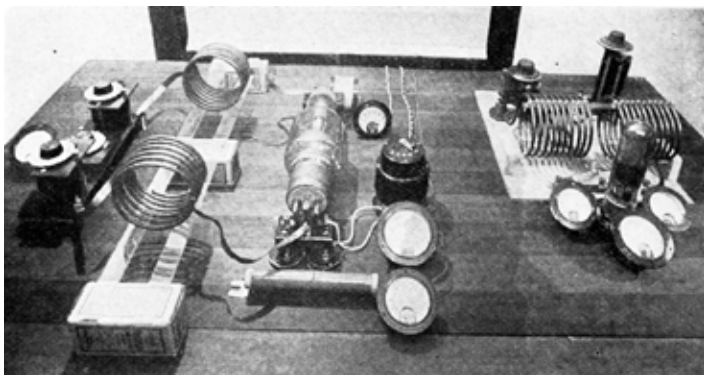
John Reinartz, 1QP, at the operating position of WNP aboard the Bowdoin

The History of Amateur Radio...

The aircraft were outfitted with battery operated, low power, single tube shortwave transmitters operating between 37 and 42 meters, using a modulator tube for phone operation. They also had standard Navy transmitters operating at 500 meters. Two portable receivers with loop antennas would be used by exploration parties to find their direction back to the planes and ships. The aircraft antennas consisted of a trailing wire while airborne and a mast-supported single wire when on the ground.

The Bowdoin and Peary sailed together from Wiscasset, Maine on 20 June as planned, bound for Greenland, with Reinartz at the key of WNP. The Peary's station, WAP, was operated by Paul J. McGee, prewar 9AE, and another member of the Zenith technical staff.

Shortwave operation made all the difference—the expedition was in nearly constant communication this time. From their northern locations, communications were reliable even in daylight on the 20-meter band, exceeding their expectations. The Bowdoin arrived at Etah, Greenland, its permanent base, on 2 August. Its first contact, made that same day, was with 9CXX, on 16 meters.



Teenager 9CXX's transmitter - one of the first Collins rigs.

Fifteen-year-old farm boy Arthur A. Collins, who “believes in simplicity for efficiency,” had been involved in radio since he was nine. The owner and operator of 9CXX in Cedar Rapids, Iowa, he became one of the main channels for communicating with the expedition. His transmitter was a 1-kilowatt input, single tube in a modified Reinartz design. A smaller transmitter used a 203A tube in a circuit laid out breadboard-style to enable him to rapidly change it around.

Despite being on a farm, his biggest problem seemed to be the lack of a friendly environment for antennas. A QST profile noted “9CXX has never been blessed with a good antenna location. Due to opposition it has been impossible to erect a good antenna.” So, he used a 50-foot long wire with 48-foot counterpoise 20 feet below it.

9CXX later became W0CXX and established the Collins Radio Company.

Failing to find any evidence of an arctic continent, the Bowdoin returned to Wiscasset on 10 October 1925, and was greeted by ARRL secretary Warner and others. Many messages were handled during their stay in the arctic. This included the WNP logs from July through October, received in full by 9CXX, and printed in QST.⁸ The winner of the silver cup for most messages handled went to Donald C. S. Comstock, 1MY, with 9CXX and 1ARE as runners up. The successes of the Macmillan expeditions inspired other explorers to use shortwave radio. By 1927, the ARRL Communications Department was participating in, and regularly reporting the status of, seven expeditions in progress at once.

Lesser in time, distance, and seriousness, another trip north was run that same summer by a handful of college students in Arizona. Oliver Wright, 6GD of Tuscon, had fixed up his Ford roadster into what he called a “true radio flivver.” He accomplished this, he said, “in cahoots with the University of Arizona radio station 6YB,” himself being “an inmate of the institution in question.”

Some appropriate decoration was called for so he added his call sign and 73 to the rear-mounted spare tire cover, affixed a burned out vacuum tube to the radiator cap, and connected a key to the car's horn which, he claimed, sounded something like “an ancient rotary gap.”

For actual radio operation Wright and the club constructed an 80-meter transmitter which could also be used as a regenerative receiver with proper switching, and a 30-inch square loop antenna with six turns of wire, mounted parallel to the side of the car to minimize wind resistance. Four turns of the loop were hooked into the plate circuit and two in the grid, according to the Hartley circuit design.

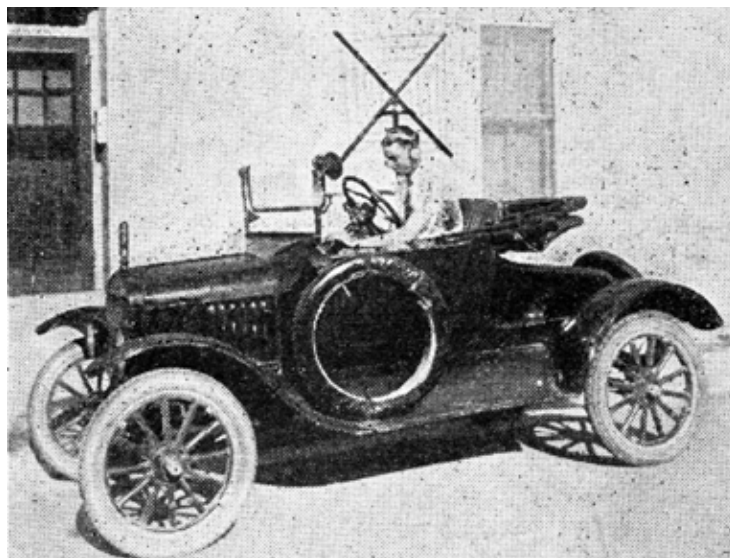
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The History of Amateur Radio...

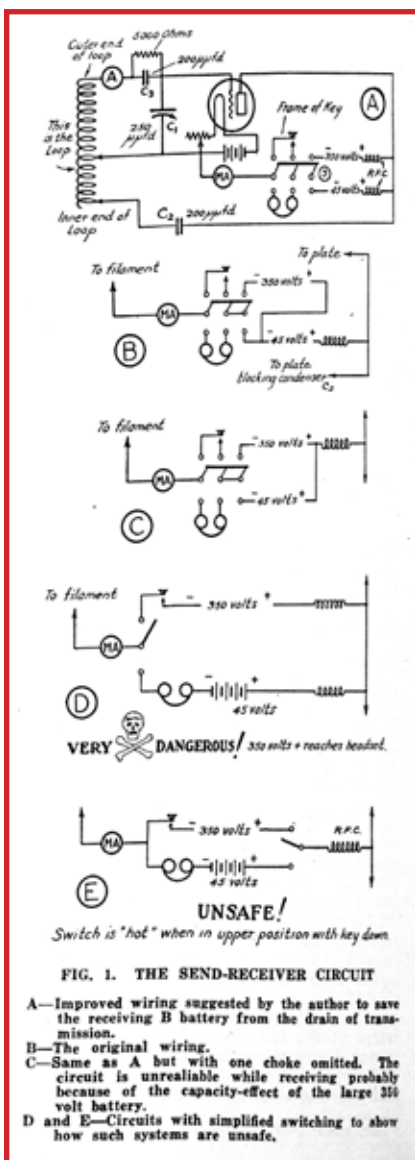
He mounted the transmitter-receiver to the right side of the seat (this car had only a single bench), leaving “plenty of room left over for two operators without crowding.”

Mobile keying

A switching arrangement kept high voltages away from the driver. The key, for example, series-connected in the plate circuit, had to be hooked up with its frame on the filament side of the transmitter. Reversing this would mean “you would most certainly get a very nasty jolt as you are practically certain to be touching the metal body of the car at some place and thereby completing the high voltage circuit through yourself,” wrote Wright.



Wright at the wheel of 6GD/mobile



Initial tests managed to establish one-way contacts only—ignition noise in the receiver drowned everything out and required shielding.

Their mission was to operate from the car while driving thirty-two miles northeast to Oracle, and attempt to maintain contact with 6YB back on campus. They considered this a challenge since the university's broadcast station could not be heard in Oracle because an intervening mountain range blocked its signal.

As they set out one hot, sunny morning, they were easily able to stay in contact with the club until the paved road ended six miles outside the city making it too difficult to operate while moving. It was hard enough keeping a transmitter on one wavelength when anchored to solid ground. Nevertheless, stopping along the way they were able to consistently QSO 6YB all the way to their destination.

Taking the time to both advertise and forestall questions, Wright reported that “before starting the trip we pasted on the windshield a little sign giving our calls, the purpose of the test, the wavelengths used and a brief description of the set, winding up with a fervent request that no fool questions be asked because we were busy.

It worked beautifully except for one old gentleman who stopped and asked: ‘Well, how’s the music, boys?’”

Mobile Keying Circuit

QST July 1925 p. 34

*Didn't Get What You Wanted From Santa?
Get It For Yourself From a EGARA Hamfest Sponsor!*



WGY - A Centennial Station

Born in the Cradle of Broadcast Technology

By John Schneider, Radio World Magazine

Editor's Note: On February 22, 2022, EGARA operated a Special Event Station to recognize the 100th anniversary of WGY, making over 1,500 contacts during the event. In the December 2022 issue of Radio World magazine, the following story appeared and it is reprinted here for the benefit of the club's members



The original 1,500-watt transmitter went on in February 1922; its open breadboard configuration was modified as improvements were developed. Six modulator tubes are at left. The RF coupling network and a self-oscillating RF tube are at center. The three-phase DC power supply frame with six rectifier tubes is at right.

WGY in Schenectady, N.Y., celebrated its centennial birthday this year, one of several dozen pioneer broadcasting stations that crossed the 100-year finish line in 2022.

Though all these stations are notable for their endurance and importance to the industry, WGY stands tall for contributing to the science of broadcasting, particularly in its first decade of its operation. For that reason Radio World is ending the year with this special photo essay about the station.

WGY began life as the flagship station of the General Electric Company, operating from G.E.'s massive campus in Schenectady. At that time, G.E. was a veritable cradle of radio technology, and WGY was nursed by some of the world's most capable engineers and scientists, among them Dr. E.F.W. Alexanderson, Dr. Charles Steinmetz, Irving Langmuir and A.D. Ring. G.E. invested nearly \$10 million in the 1920s for the study of RF propagation, transmitters and power vacuum tubes, and WGY was its field laboratory.

At the dawn of broadcasting, stations used telephone-mouthpiece microphones and wind-up phonographs to feed their programs to crude homebuilt transmitters. Early vacuum tubes were low-powered, unstable, expensive and short-lived. That had all changed by the end of the decade, when stable, powerful transmitters, elaborate studio equipment and high-fidelity microphones were delivering quality programs to listeners. Most of these technological improvements were developed by just three companies: AT&T, Westinghouse and General Electric.

WGY, blessed with near-unlimited funding by one of the world's largest corporations, served as the laboratory where much of those technologies were tested.

Going haywire

WGY was birthed on Feb. 20, 1922, the 12th broadcaster in the country. Its two-room studio was on the fourth floor of G.E. Building 36, with a transmitter squeezed into the elevator room of Building 40 a half-mile away. Two 180-foot towers and a flat-top antenna rose from the rooftop.

That first transmitter, capable of 1,500 watts (considered high power for the time) was a "haywire" contraption — open wooden frames supporting coils, wires and vacuum tubes. Dr. W.R.G. Baker, in charge of radio transmitter development, built the transmitter, and William C. White, head of the vacuum tube division, crafted the tubes. White later said, "It was a crude affair and, as we look at pictures of the equipment at that time, it is a wonder that it ever stayed together." Even after WGY went on the air, the transmitter was continually being altered as new circuits and tubes were tested.

Received across most of the eastern United States at night, WGY quickly drew attention for its quality programming.

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WGY Centennial...



WGY's first antenna is seen on the roof of General Electric Building No. 40 in Schenectady. The two 183-foot support towers were spaced 350 feet apart, and the flat-top horizontal antenna was 200 feet long.

Proving ground

William White and his development team continued their push for bigger tubes having higher power, longer life and better efficiency.

“WGY was never too much of a showplace because we were always trying something new in the way of new types of tubes,” he said. “Some of those were screen-grid tubes, thoriated filament tubes and mercury vapor rectifier tubes. Our own station WGY was very often a proving ground where we tried out new things.”

Work began to develop a 100 kW water cooled tube, and on July 18, 1925, WGY became the first station anywhere to broadcast with 50 kW. The test was coordinated with the Department of Commerce and widely publicized, and thousands of letters were received praising the reception quality. More testing followed, with transmissions taking place during early morning hours. On Oct. 3, WGY was allowed 50 kW operation on Saturdays and Sundays, and, after several months with no significant interference complaints, authorization was given to operate at 50 kW full time on May 8, 1926.

In 1928, GE started accepting outside orders for its 100 kW UV-862 tubes. This imposing device was a copper-and-glass cylinder measuring 5 feet in length and 6 inches in diameter, costing over \$1,000 each in 1930s dollars (roughly \$16,000 today). Both it and the 20 kW UV-207 tube were manufactured in substantial quantities, becoming the principal higher-power tube types in use through the end of World War II.

Besides a regular schedule of live music, news and farm bulletins, WGY was the first station to experiment with radio drama, producing a new “radio play” each week. But although these programs were well-received by listeners, it was the behind-the-scenes experimentation in high-power transmission that is notable today.

Scarcely two months after its debut, additional tubes were added to raise the power to 5 kW. It was at that point they realized there was a limit to the size and power of glass tubes, and to how many of them could be operated in parallel without creating parasitic problems and a loss of efficiency. A better solution would be needed.

In 1924, the WGY transmitter moved to its current location in the Town of Rotterdam, then known as South Schenectady. Its new transmitter generated 10 kW using a single experimental 20 kW UV-207, the first practical water-cooled tube. This higher power was also made possible by another G.E. development, the mercury vapor rectifier tube, which allowed the generation of higher DC voltages.

Even though 10 kW was the highest broadcasting power achieved to that time, this did not weaken G.E.'s quest for still more power. After all, G.E. manufactured dynamos capable of thousands of kilowatts, and so the task of creating higher-power vacuum tubes was not intimidating.

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WGY Centennial...

As a next step, G.E. finalized the design of a 50 kW transmitter, the popular 50B, using two UV-862 tubes in its final amplifier. Most of the prestigious clear-channel stations in the U.S. adopted it, and many of these rigs remained on the air into the 1950s. The first unit was installed at WGY, and then G.E. built more for WTIC, WEAf, KPO, KOA, WENR, WFAA and KFI. Westinghouse and RCA later manufactured the 50B for numerous other stations.

And still, the quest for even higher power continued as multiple UV-862 tubes were being paralleled for still more kilowatts. WGY aired tests at 100 kW in 1927, 150 kW in 1928 and 200 kW in 1930. In 1928, WGY asked the Federal Radio Commission to broadcast at 150,000 watts, but its application was denied.

Nonetheless, the high-power technologies developed for those tests found a home when RCA accepted the task of building a 500 kW transmitter for WLW in Cincinnati, the most powerful broadcast transmitter ever made to that time.

With its high-power RF experience, G.E. was contracted to build the RF section and Westinghouse was assigned the modulator. G.E.'s RF design consisted of three independent 166 kW Class "A" power amplifiers connected in series to feed the antenna. This "monster transmitter" operated reliably at WLW from 1934 until 1939, when political pressures persuaded the FCC to rescind WLW's super-power experimental authority.

Even though most of the radio technologies that General Electric developed in those early years have since been superseded by modern solid-state and digital technologies, we can still marvel at the genius and commitment of those early engineers and scientists who advanced radio broadcasting from a crude experiment into a stable commercial and technical enterprise.



Early broadcasting was plagued by annoying heterodyne interference caused by transmitters drifting off frequency. This limited the number of stations that could operate on a channel. General Electric solved this by adapting quartz crystal oscillators for use in transmitters. Instead of the usual self-oscillating high-powered RF stage, this required a master oscillatorpower amplifier topology. Here, young General Electric engineer Andrew D. Ring displays G.E.'s first crystal oscillator system, placed into service at WGY in 1926.



Today we recognize WGY for its role in this process, and for enduring as one of the country's preeminent broadcasters for a complete century.

To demonstrate its size, the photographer had Kathryn Carroll stand next to one of G.E.'s UV-862 RF power tubes.

The water-cooled copper anode is at the bottom, with the glass-enclosed plate and grid assembly at the top.

CALENDAR

January 11, 2023 - 7 pm - Monthly Club Meeting - East Greenbush Masonic Lodge Hall

January 28 & 29, 2023 - Winter Field Day - East Greenbush masonic Lodge Hall

Pro Tip: Emergency Protocols

Different repeaters handle emergency communications in different ways.

A general guideline is this: if you are on an unfamiliar repeater and you have emergency traffic, say so!

Example: "Can someone help me contact the State Police?" or "I need help contacting the Fire Department." Asking "is anybody monitoring?" may sound more like an attempt to start a casual conversation. On many repeaters, you very well may be ignored.

However, if you state that you have emergency traffic, people on many repeaters will drop what they are doing to help you.

Note: if you are monitoring a repeater and someone asks for emergency assistance and you cannot help, BE SILENT! There are few things worse than someone breaking in to say that they would help except that they can't regardless of the reason.

Recommendations:

- If you have emergency traffic, say so immediately.
- If you can help, do so.
- If you cannot help, do not transmit.



For Sale...

- MFJ - 941D versa tuner (2 available) \$25 each
- Voltmeter kit \$5
Contact Don, KB2CDX at: ddm653@gmail.com

- KENWOOD TS 520, \$225.
Contact Tom, KC2FCP at kc2fcp@nycap.rr.com

- MFJ-9575, 10 watt 75 meter LSB transceiver
- Dx Engineering, 200 watt 75 meter bandpass filter
- TEN-TEC 1209, 2 meter to 6 meter transverter
- TEN-TEC 1210 10 meter to 6 meter transverter

Make offers for any above

Contact: John Hackert, WA2JAE (518) 381-4847, Email: Wa2jae@Arrl.net or John.hackert@Reagan.com



- VIBROPLEX "Bug" semi-automatic key. Original "PRESENTATION" Model with Gold Plated baseplate escutcheon. Heavily chromed upper parts, bright red finger pieces, jeweled bearings. Lists for \$350 but only \$250 plus postage. Beautiful condition, and a dazzling example of Vibroplex engineering supplied in a unique hard-shell protective carrying case as shown above.

Contact Steve at: (518) 326-0902 or stevewb2hpr@gmail.com

- Ameritron AL811H runs 572Bs and many upgrades including grounded grids and arc protection New filter caps. \$800 or will consider equal trade.

Contact Justin, KG2RG at 518 542-1342 or email: kg2rg@hotmail.com

Sell your unused gear with a free ad in Sidebands!

Send details to:

W2RBJ@Outlook.com

The East Greenbush Amateur Radio Association

Organized in 1998, by Bert Bruins, N2FPJ, (SK) and Chris Linck, N2NEH, the East Greenbush Amateur Radio Association, an ARRL affiliate, is committed to providing emergency services, educational programs, and operating resources to amateur radio operators and residents of the Capital Region of New York State. The club station is W2EGB. The club also has several VHF and UHF repeaters open to club members and the public.